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THE VETERINARY REPORT FOR 1904.

Last week we referred to the contribution to this report by the late Chief Veterinary Officer; this week we propose to notice the contribution made by the Assistant Secretary. The Board attempts to sharply define the functions of its administrative officers and its professional advisers. In doing this it only follows the evil example of other government departments—the War Office for example. The muddle that results and the unnecessary expense which is entailed are matters for the taxpayer, but that harmless individual possesses neither the knowledge to see the position nor the energy to protest against it.

The expert is employed because he cannot be done without. His brains and work achieve what success is obtainable under the circumstances, whilst the so-called administrator claims the credit and gets the biggest salary. Some alteration has recently taken place at the War Office and the Admiralty. If other departments could only have the same light let in upon them that has been employed to illuminate the fighting services there would soon be a cry for reform all round. In the really trying times, when many diseases were rife in the kingdom, the Director-General of the State Veterinary Department was a veterinarian, (an expert) Sir G. T. Brown, and the work was done well. He knew what was wanted and was able to direct his campaign against disease with effect. The minor matters of office work were not held superior to the action at the seat of disease. The exact and punctual delivery of returns and forms was not estimated as more important than the actual suppression of disease. His work is now claimed as the chief asset of the department. What *has* been done is the pride of the Board—but they did little of it. What success they have since achieved is the result solely of carrying out the advice offered by veterinarians and for long years ignored by the administrative section.

The opening sentence of the Assistant Secretary's report is: "The outstanding fact in connection with the work of the Animals' Division during the year 1904, as to which the following report is submitted, is the complete immunity of Great Britain for another year from the diseases of cattle-plague, pleuro-pneumonia, foot and mouth disease, sheep-pox and rabies. . . . On the other hand there has again been a slight increase in the number of reported outbreaks of glanders and a marked rise in those of anthrax." A "slight increase" of glanders, says the Assistant Secretary. Is this an honest description of the state of affairs by a man who knows that only once since the diseases of animals were legislated for has such a bad year been shown? In 1898 there were only 748 outbreaks; in 1900 there were 1119; in 1902 there were 1155; in 1904 there were 1529. For some causes—we fail to discover what—the Board of Agriculture always does its best to minimise the prevalence of glanders. If questions are asked in Parliament evasive answers are given. The annual reports give figures in the statistical tables but the officials fence with these in their report and exaggerate the difficulties of doing anything more than is being done. If they would fairly state the facts they would be forced to move. The facts are simple—2,000 horses are killed every year, and probably 20 human beings. When we go to war the disease is spread through the army and causes inefficency. These are the facts. The chief local authorities have asked for more power, the horse owners have petitioned for more efficient action, and the veterinary profession and the veterinary advisers of the Board are unanimous as to what should be done. There is no difficulty now about the visibly diseased horse—all agree to kill him and pay a small compensation. But this performance does not control the disease, which has gone on increasing in the face of such a regulation since 1898. Every one knows that the "in-contact"—the horse with latent disease—must be dealt with. Every one knows (except Sir Walter Gilbey) that the latent disease can be detected by the use of mallein. When detected what shall we do with him? The horse-owner is willing the reactor should be killed if he is paid a fair compensation. Some of them ask too much, but all would accept half-value if the law were boldly enforced. Local authorities claim that a portion of this compensation should be paid by the Treasury, and their arguments are unanswerable. The Treasury refuse to pay, and the Board, from political exigencies, does not insist.

The loss of horses may be valued at £50,000 annually. If there are 1,500 horses killed per annum as clinically diseased there are probably seven or eight thousand latent cases which would be detected by mallein. Say that in the first year 4,000 reactors had to be killed and compensation paid on the scale of one-half value—£15 per horse—we should want £60,000. The local authorities would pay half and the Treasury would be called upon for £30,000. Is it creditable to this country that for the sake of such an expenditure we should continue to have business interrupted, war rendered less efficient, a score of human lives lost, and the horse-owners made to lose annually about £50,000?

"Careful observation makes a skilful practitioner but his skill dies with him. By recording his observations he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of Pathological Science."

A NOTE ON OPHTHALMIA NEONATORUM.

Observing that Mr. Rankin mentioned an outbreak of "Ophthalmia" in newly born lambs, at the South Durham and North Yorkshire Veterinary Medical Association, I thought of a similar outbreak that came under my notice occurring in kittens.

Some little time ago I attended a number of valuable kittens for a complaint which I recognised as "Ophthalmia neonatorum" or purulent ophthalmia of the new born kitten. The outbreak originated among a litter of kittens whose mother was unhealthy and the subject of vaginitis at the time of giving birth to the kittens. The disease was one that spread with great rapidity among all the kittens in the place, even attacking those of different litters and different breeds. Owing to the fact that eyes of kittens do not open till about the ninth day after birth, the disease had generally reached a very advanced stage before it was discovered. Perhaps a few details of this disease might be of some interest, referring in particular to the above mentioned outbreak.

Cause.—The causes of this disease are generally attributed to some infection at the time of birth, generally from a vaginal discharge. Inoculation with a leucorrhœal discharge at the time of parturition is believed to be a common cause in infants. The disease attacks first one eye and then in a day or two the other, the first affected generally suffering the most. As the name of the disease implies it attacks the patient very early in life, and it may be said to attack animals between the ages of one day and two to three weeks.

Symptoms.—Generally speaking the symptoms seen are as follows:—It is first noticed that the closed lids appear more swollen than is usual and this is followed in a short time by the oozing out of a thick yellowish-white purulent discharge from between the closed eyelids. On separating the lids, which are stuck together, a quantity of this purulent matter escapes and the escape of this shows marked inflammation and congestion of the conjunctiva and sclerotic. The palpebral conjunctiva is protruded outside the eyelids and is greatly swollen, the eyelids themselves being everted. The swelling is often so great as to hide the cornea from view altogether. The sclerotic conjunctiva is in a state of chemosis, and soon after this sets in, unless the disease be arrested at this stage, the cornea becomes affected and becomes at first hazy, which is followed by ulceration or abscess formation. In very advanced cases the ulceration of the cornea is followed by perforation and prolapsus iridis taking place, this again by partial or total staphyloma with all its attendant changes.

Prognosis.—Owing to the very advanced stage in which the disease is generally seen in the kitten, it has often reached a stage when treatment is, to say the least, difficult. Those seen early, before the cornea is affected, do well, but when that structure has become perforated the prognosis depends largely upon the constitutional state of the patient, a number dying from exhaustion, whilst in others, the staphyloma bursts and the aqueous humour, lens and vitreous humour escape.

Treatment.—When seen before the eye-lids separate the best treatment is to bathe the eye-lids with warm boric lotion, and on the lids separating, the contained purulent matter is allowed to escape and the interior of the lids and surrounding parts well washed out with warm Boric or Chinosol lotion, and then a lotion consisting of Nitrate of silver gr. v. to the ℥i. of water used after cocainising. The lips should be annointed with ordinary red precipitate ointment, whilst in some cases scarification of the lids gives great relief. Another astringent of great service is adrenaline, this used in the form of the saline solution and of a strength of 1-8 of water relieves the congestion and irritability of the conjunctiva very quickly.

If the eye-lids have burst open of themselves and the cornea is ulcerated or otherwise affected the use of the nitrate of silver pencil is to be recommended. The general treatment as is usual for ophthalmic cases is indicated here. A mild blister behind the ears in some cases is beneficial, and a small dose of Calomel is also indicated in almost all cases.

Remarks.—The above note on "Ophthalmia Neonatorum" is taken with the kitten as the example, but the same holds good for both the lamb and the infant. But as the human subject and lambs are born with their eyes open, the disease is usually seen in its very earliest stage and the prognosis is therefore considerably more favourable.

"OMEGA."

THE VETERINARY MEDICAL ASSOCIATION OF IRELAND.

A RESUME ON TRYPANOSOMES AND TRYPANOSOMIASIS.

By Capt. W. A. PALLIN, F.R.C.V.S., F.R.S.E., A.V.D.

Mr. President and Gentlemen,—Before going on to the subject of my paper I must explain that owing to a slight misunderstanding I did not realise that I was being depended upon to write a paper for this meeting until just three weeks ago, consequently the time at my disposal has been too short a prepare a paper which to my mind would in any way do justice to the subject which I have chosen. I must therefore ask you to make some allowances for my many shortcomings and for the somewhat sketchy manner in which I have dealt with this all too important a series of disease.

In coming to a decision on a subject for a paper, I have made my selection rather with mixed feelings. Firstly, because, although I have been several years abroad and in countries where these diseases exist, it has not been my lot to have had much opportunity of studying them in their own *habitat*; and secondly, be-

cause I cannot therefore lay claim to many original remarks or observations on the subject ; still as I had an opportunity of studying the disease in almost all its known forms while doing a post-graduate course at the Liverpool University last summer, I thought that considering the risk which undoubtedly does exist of at least one of the diseases belonging to this category, namely dourine, being imported into this country at any moment, a short *résumé* on the whole subject, together with the exhibition of some microscopical slides, would be a fitting result of the timely warnings which we have, from time to time, had from the pen of more than one of the Editors of our veterinary periodicals during the last two or three years, for as the saying goes : "To be forewarned is to be forearmed."

Morphology.

Under the general name of trypanosomes we recognise a variety of hæmatozoa or blood parasite belonging to the order of infusorial flagellated protozoa with undulating membranes, genus trypanosomata, of which there are two varieties, viz., the trypanosoma, which have one flagellum situated at the anterior end ; and the trypanoplasma, which have a flagellum at each end. According to a recently published paper by Schaudinn, trypanosomes form a cycle in the evolution of blood parasites, and judging by the frequency with which they are found complicating other blood diseases there is every reason to accept this theory as a very feasible solution.

Trypanosomes are fusiform in shape, with a more or less elongated body, the latter possesses an undulating membrane which being prolonged anteriorly forms a long whip-like appendix called the flagellum. The body consists of protoplasm in which two nuclei or chromatin bodies are found to exist, these are respectively :

(1) The macronucleus or nucleus proper, and

(2) The micronucleus or centrosome, the latter is situated posteriorly and in stained specimens will be seen to mark the posterior end of the flagellum, and is occasionally accompanied by a vacuole or clear space.

The organisms vary in length and breadth considerably, they can be readily seen under a low power, and in fresh specimens owing to the constant manner in which they keep wriggling about, the whole field will be found to be moving, so much so that considerable difficulty is experienced in keeping any one organism in the same field for any length of time. They are seen wriggling in a worm-like fashion in and out amongst the blood corpuscles and are frequently noticed to be attached or tugging at one of the red blood corpuscles—many of which in advanced stages of the disease are crenated, and become considerably reduced in number.

According to Rabinowitsch and Kempner multiplication takes place by division, which may be either longitudinal, transverse, or by segmentation. The centrosome is seen to divide first, then the flagellum and then the nucleus. Trypanosomes in the course of division are frequently met with, and several writers on the subject, including Holmes, (*Journal of Comparative Pathology*, September, 1904) hold that male and female trypanosomes exist and that conjugation takes place.

The parasite is easily stained with most of the ordinary stains, but the best results have been obtained by the special methods recommended by Romanowsky and Leishman, as by these methods the protoplasm is stained blue, the nucleus violet, and the flagellum and centrosome a bright red. In a fresh specimen the different varieties of trypanosomes are distinguished by their number, motility, manner in which they move and their size; in the stained specimen by their size, shape, length of flagellum, set by the respective positions of the nucleus and centrosome, and also by the character of the protoplasm, viz., whether granular or otherwise.

Agglutination.

One of the most curious phenomena in connection with trypanosomes is that of agglutination, contrary to all other bacteria these organisms remain alive after agglutination has taken place. Numbers of them can be seen attached together by their posterior extremities forming a kind of rosette, the flagellæ and undulating membranes continuing to perform their various movements. The phenomena is best seen in defibrinated blood and with the trypanosomes Lewisi. (Laveran and Mesnil).

History.

The first trypanosome was discovered in 1841 by Valentine, in a trout, and in the years 1842 and 1843 respectively they were again demonstrated by Gluge and Mayer in the blood of frogs. In 1878 Lewis described a trypanosome which he found to be present in the blood of 29 rats out of a 100 examined in Calcutta, but it was not until the year 1880 when Evans discovered the existence of trypanosomes in the blood of horses and camels suffering from surra in India, that any real pathological importance was attributed to them, and in fact even then very little progress was made in the study of these organisms until Bruce in 1894 discovered the trypanosome of nagana or tsetse fly disease in horses and cattle in Zululand, and showed also at the same time that the disease was spread by means of the particular fly after which the disease has been called. In the same year Rouget discovered the trypanosome equiperdum in the blood of a horse, and his observations were confirmed in 1899 by Schneider and Buffard who showed that these organisms were the cause of dourine. In 1901 Elmassian published the results of his researches into a disease found in South America known by the name of mal de caderas which he found was also due to a trypanosome now known by the same name. In the following year, 1902, additional interest was centred in the study of these organisms when Dutton and Todd discovered them to be the causal agent of sleeping sickness, a disease prevalent amongst human beings in several parts of West and Central Africa. About the same time these two observers also discovered the trypanosoma dimorphum which causes a disease seen amongst horses in Gambia, and now known as Gambian horse sickness. In March, 1902, Theiler described a trypanosome which he found in the blood of cattle in South Africa suffering from galziekte or gall sickness, to which both Laveran and Bruce have given the name of Trypanosoma Theileri, and in August of the same year another new organism also found in the blood of cattle in the Transvaal was described by Theiler, to which has been given the name of Trypanosoma Transvaaliense. Recently several French writers have reported a special form of disease affecting horses, camels, and cattle both in Algeria and the French Soudan which from all accounts would appear to be identical with nagana or tsetse fly disease, and later still, Durrant and Holmes (*Journal of Comparative Pathology*, Sept. 1904), report having found a new trypanosome in the blood of hill cattle in India, which made its appearance in the blood secondary to rinderpest, and also complicated with other diseases.

Technique for the Study of the Trypanosoma.

Trypanosomes are best observed in a specimen of freshly drawn blood from an animal suffering from the disease, it is best obtained from one of the small veins of the ear, or in the case of rats and mice from the end of the tail after having clipped off a piece with the scissors. Take a small drop of blood on a cover glass, then placing the latter face downwards on a clean slide, examine immediately under the microscope with both the high and low power, noting the movements, size and

number, also observing that the trypanosomes remain alive for many hours, even on ice especially if kept free from bacterial infection, and note also the phenomena of auto-agglutination which takes place in the specimen (Annett's Liverpool lectures). For staining, make smears on clean slides, quickly dry the smear by waving rapidly about and then fix by placing it in absolute alcohol or ether for fifteen minutes to half-an-hour, wash in water, dry and stain, using either of the methods already mentioned, and leaving the stain on for seven to fifteen minutes, then wash carefully in water again and examine under the microscope, noting size, structure, and characteristic staining, *i.e.* position of the nucleus, centrosome, character of the granulations, length of the flagellum and its mode of origin.

Cultivation.

The possibility of cultivating these organisms is a very recent discovery and was first suggested by McNeal and Novy who succeeded in making a culture of the trypanosoma Lewisi, after which T. Brucei, T. Evansi and other trypanosomes were also cultivated. The cultivation of trypanosomes is fairly easy, and is best obtained on a medium consisting of nutrient gelatine containing 1 to 3 p/c. of peptone and a little defibrinated blood, and at ordinary room temperature (Laveran and Mesnil).

Trypanosoma Lewisi.

Found in 25 p/c. of wild rats all over the world. They apparently cause no particular disease, and natural infection appears to take place by means of fleas. They are pathogenic to white rats, which however do not become infected naturally, but can be easily inoculated experimentally. The incubative period being from two to seven days. The organism when seen in the fresh state has a worm-like movement and is the most mobile of all trypanosomes, its posterior extremity is pointed and its measurements are 24 - 25μ long by 1 - 4u broad.

The protoplasm is finely granular, and contains an oblong nucleus situated a little towards the anterior extremity. The methods of multiplication vary and may take place either by transverse, longitudinally or by segmentation, and care should be taken that these conditions are not mistaken for agglutination.

Nagana or Tsetse Fly Disease.

Nagana or tsetse fly disease due to the presence in the blood of the Trypanosoma Brucei, is found in various parts of Africa, particularly Zululand (where the disease was first studied by Bruce), all the countries North, East, and West of the Transvaal, Uganda, and in the Soudan, affecting horses, cattle, buffaloes, mules, asses, goats, pigs, dogs, hyenas, antelopes etc. The word nagana, according to Bruce, is Zulu, and denotes a depressed sinking condition, which is one of the chief symptoms. The disease is invariably fatal to horses, donkeys, and dogs, but in cattle a few cases recover. The organism measures 25 - 30u long by 1·5 - 2·5u broad, the undulating membrane is broader than that of T. Lewisi. The posterior end is not so sharp, the protoplasm stains more easily and is more granular, the nucleus is made up of five pieces of chromatin, is very distinct, and there is a well marked vacuole and multiplication takes place entirely by the longitudinal method. The organism is pathogenic to all laboratory animals, but guinea-pigs are found to be the most immune, and African sheep and birds are not affected. The disease is spread by means of the tsetse fly, the "Glossina morsitans." An insect very like the ordinary horse fly, but characterised by the manner in which its wings overlap when at rest and also by its rapid movements. It has been proved beyond doubt that the disease is carried by these flies, but it is possible that there may be other means of transmission, still the disease is only found in tracts of land where the tsetse fly is known to exist. It is stated that the trypanosomes die very shortly after entering the stomach of the tsetse fly, so it is possible that another cycle takes place in the body of the fly.

The fly is said to disappear from a locality with the disappearance of large game and various wild beasts, which it is stated are naturally infected and a constant source of infection.

The period of incubation varies with the species of animal, with the richness in trypanosomes of the liquid injected, and with the condition of the organism at the time of inoculation. In rats it appears to vary from one to six days or more. Dogs two to six days. Horses, asses and mules four to ten days, and cattle two to five days or more. Laveran and Mesnil have classified the different animals according to their susceptibility as follows :–

1st. Animals in which the course of the disease is acute, viz., mice, wild rats, marmosets, hedgehogs, dogs, and monkeys.

2nd. Animals in which the course of the disease is sub-acute, viz., rabbits, guinea-pigs, field mice, dormice, horses, asses, hybrids and pigs.

3rd. Animals in which the course of the disease is chronic, viz., cattle, goats and sheep.

The duration of the disease in a few of the susceptible animals is roughly as follows :—Dogs three weeks, cats anything up to nine weeks, horses one to seven weeks, donkeys twelve weeks, but in cattle the period is longer and very indefinite.

Symptoms.—As will be seen from the foregoing, these must naturally vary with the species of animal affected, but like all these diseases they are characterised by fever which may be constant or intermittent—gradual or rapid emaciation. Oedema of the head, chest, abdomen, genitals, and limbs. Watery discharge from the nose and eyes, particularly in horses and dogs—in which animals opacity and ulceration of the cornea and blindness may supervene—added to these there is œdema of the eyelids and scabs and sores may form around the eyes and nose from the irritation of the discharges. There is profound anæmia, the number of red blood corpuscles is decreased, numbers of them may be altered in shape, and there is a more or less corresponding increase in the white. The parasites are constant in the blood, but are generally present in larger numbers when there is a rise of temperature. They are found in the peripheral blood and in all discharges. The appetite remains voracious throughout and the final stages end in convulsions and death.

Post-mortem Appearances.—The lympathic glands are enlarged, congested and œdematous, and may be hæmorrhagic, the spleen is enlarged, dark and friable, the liver is enlarged, fatty and friable and shows subcapsular hæmorrhages. The œdematous swellings contain a pale yellow fluid and the serous cavities contain quantities of a similar field. Hæmorrhagic spots are found on the pericardium, and the heart muscle is atrophied. The foregoing remarks on the symptoms and post-mortem appearances are tabulated with special reference to the horse. In the dog eruptions on the skin are almost always present, the disease is invariably rapid and fatal, and on post-mortem examination the lymphatics are generally found to be enlarged, the heart is often a bright red colour due to extravasations of blood, and large masses of jelly-like substances are found in the aorta, the capsule of the spleen exhibits a blue colour and extravasations of blood are found underneath it. In the donkey the symptoms are much the same as in the horse, as also are the post-mortem appearances. In cattle the disease may last for months or years, but there is not the same tendency to ascitis, opacity of the cornea and blindness—the post-mortem appearances are, however, practically the same as those already given for the horse except that the œdema is less marked and its

place is taken by hæmorrhages. (Annett's Liverpool lectures).

Surra

This is the name employed by the natives of certain districts in India for a disease which has been known for years, affecting the horses of those parts. The disease is characterised by intermittent fever and profound anæmia, and is almost invariably followed by death. It is due to the presence in the blood of the trypanosoma Evansi, which, as already stated, was discovered by Evans in 1880, the measurements or the organism are 25 - 30*u* long by 1 - 2*u* broad and it very much resembles T. Brucei, except that it is slightly thinner, the free portion of the flagellum is longer, and the protoplasm is less granular—multiplication takes places longitudinally. In addition to horses, mules and donkeys are also affected, as also to a less degree are camels, elephants, dogs and cats and occasionally cattle. Rats and mice being only apparently infected experimentally.

In addition to India the disease exists in Burmah, the Philippines, Mauritius, Malay Peninsula, Indo-China, the Persian Gulf, Algeria, Egypt, Syria, Korea, Australia, Brazil, and in parts of Zululand, where it has been confounded with nagana. It occurs generally after the rainy season and in low lying waterlogged localities.

The method of infection has not yet been actually proved, but it is thought that, like nagana, transmission takes places through the agency of flies, particularly the Tabanus tropicus, a species of diptera, invariably found in surra infected districts and very similar in appearance to the Tsetse fly—other insects such as ordinary gad flies, mosquitos, etc., should also be mentioned, but it is now generally accepted that the first named insect is the chief carrier of this disease. Ingestion of infected food and water particularly from low lying land have also been thought to be a means of infection and certainly in some outbreaks in India, a change of grass and also draining the so-called infected area has had the effect of checking the disease—but the latter may have most probably been effective by destroying the breeding places of the particular insect which transmits the disease. Lingard suggests birds, bandicoots and rats, and no doubt these animals may act as hosts of the parasite.

The incubative period obtained experimentally varies from 4 to 13 days. The symptoms and general course of the disease are very similar to those of nagana with the following variations :

At the outset of the disease there is a rise of temperature accompanied by an attack of urticaria followed by the appearance of petechial spots on the membrana nictitans, there is frequently a regular sudden rise followed by a gradual fall of temperature, about every 10 days, at these periods the organisms are generally found to be very numerous and during the intervals they diminish and may be altogether absent—one peculiarity specially noted by Steel in his pamphlet on this disease, is that "the patient will continue to feed during a paroxysm of fever, even when its temperature is as high as 105° F.," the visible mucous membranes become pallid, and at a later period yellow and icteric. Oedema of the limbs, sheath and lower parts of the chest and abdomen are marked symptoms, and a progressive pernicious anæmia becomes daily more apparent. In the horse, the disease runs a course of two or three weeks up to a couple of months or more, and finally ends in death.

The post mortem appearances are very similar to those of nagana—except for a slight difference in the organism, and the presence of petechial spots on almost all the mucous and serous membranes throughout. It is worthy of note that although several writers seem to think that nagana and surra are identical, when surra (from which cattle of India appear to be immune) was imported into the Mauritius, the disease caused great mortality amongst the cattle of that island. It is further worthy of note that when cattle in India are inoculated with Surra they do not contract the disease, but their blood is capable of producing the disease in horses, rabbits and guinea pigs, many months after inoculation (Durrant and Holmes, *Journal of Comp. Pathology*, September, 1904.

Mal de Caderas.

Literally translated is a disease of the hind quarters and appears to be a particular form of Trypanosomiasis confined to South America, and more especially to Brazil and the Argentine. The disease is due to the presence in the blood of the Trypanosoma Equinum, which as already stated was discovered by Elmassian in 1896, it is an organism very similar in size and general appearance to the last two described, *i.e.*, T. Brucei and T. Evansi, the principal difference being in the character of the centrosome, which is so small that it is with difficulty it can be seen, in fact in a stained specimen it appears only as a slight enlargement at the end of the flagellum. Multiplication takes place both by the longitudinal and transverse methods.

The disease is found almost exclusively affecting horses ; mules and donkeys are, however, also attacked, but they show a greater power of resistance, other animals only become infected by inoculation. The exact method of transmission has not yet been proved but the suspected intermediary hosts are the stomoxys calcitrans and the culicidæ.

The period of incubation is indefinite, but in the horse the temperature begins to rise about the seventh day and the trypanosomes are generally found in the blood 15 to 18 days after inoculation. The disease although very similar in many ways to nagana and surra, is less acute, running a course varying from one month to a year and characterised by the gradual development of paralysis. The temperature chart is also characteristic, the fever which is intermittent, is at times very high, but during the interim may fall even below normal dragging of the hind legs and symptoms of paralysis of the hind quarters gradually develop, and haemoglobinuria and hæmaturia are frequently found accompanying the other symptoms, especially in the horse. Small patches develop on the skin, over which the hair falls off, especially on the withers and back and those parts adjacent to articulations. The eyelids become puffed and swollen, the conjunctiva red and sometimes accompanied by a profuse muco-purulent discharge.

The post mortem appearances are practically identical with those of nagana and surra. It is stated that cattle inoculated with the disease do not contract it but that when their blood is inoculated into susceptible animals, the latter contract the disease—in fact this experiment appears to hold good with almost every variety of trypanosome, showing that the disease lies dormant in the system of non-susceptible animals. Further, animals immunised against nagana are still susceptible to mal de caderas, and also that the serum of animals immunised against nagana while effective against T. Brucei is without effect on the T. equinum.

Dourine or Maladie du Coit

We now come to a form of disease affecting horses and other equines with which it behoves everyone of us to makes ourselves thoroughly conversant, namely dourine or maladie du coit, for although it has fortunately not yet been imported into this country, we cannot shut our eyes to the fact that with the present day extended traffic in horses the risk of this disease being imported from foreign countries must be taken into serious consideration. and more especially in a country like Ireland where horse breeding is the leading source of industry. The disease was first noticed in Europe at the beginning of the 19th century, but appears to have existed in Algeria, and other countries bordering on the south of the

Mediterranean from very early times. Amongst the countries in Europe in which the disease has been found to exist, are Spain, Germany, Switzerland, Austria-Hungary, Russia, Turkey, and France. In India the disease has only been known to exist since 1899 and the latest reports show that already owing to the ravages of this disease, the Government of that country have lost over £10,000 in sires alone, and that at the present moment the horse breeding operations of the country are almost at a stand still. From Canada and the United States comes information that the disease has recently made it appearance there also. It is stated to have been imported from France, and that it is causing serious loss to horse owners in various parts of the country, in fact I gather from the *American Veterinary Review* of last September that the Canadian Government had ordered the destruction of some 200 animals affected with the disease. Now taking all these facts into consideration it seems to me nothing more or less than a marvel that this country has escaped so far, except that for the fact that our trade in horses is principally an export one, and that comparatively speaking there is very little import. Still the same argnment would appear to hold good for Canada and the United States, and when we take into consideration the rapidity with which one infected sire could infect a whole district, the necessity for taking immediate steps to guard against the importation of this fatal disease becomes a matter of national importance of the first order. The disease is due to the presence in the blood of the Trypanosoma equiperdum and is characterised by the fact that it is apparently only transmitted by coition, as geldings and mules do not naturally become affected like other animals which with exception of sheep and goats, are all susceptible to the disease.

The following are the other names under which the disease is known, viz., venereal disease of the horse, horse syphilis, genital glanders, breeding paralysis and dourine, the last mentioned name being, according to Pease, derived from Arabic, and signifies dirt.

The organism is 18 to 26 μ long by 2 to 2·5 μ broad, and with the exception of being somewhat smaller, closely resembles the trypanosomes of nagana and surra. It has a well marked nucleus and centrosome. The organisms are less active and never so numerous as those of surra—its posterior extremity varies considerably in shape, it is frequently found to have a kind of double point and the protoplasm is less granular than T. Brucei. Multiplication takes place by the longitudinal method. Transmission apparently only takes place naturally during coition but it is also possibie that the disease may, like others of the same genus, be spread by insects.

The incubative period obtained by artificial inoculation varies from 7 to 10 days, and naturally obtained, the first symptoms appear in from 12 to 20 days after coition.

The disease as seen in the horse may run either an acute or chronic course, varying from 2 or 3 months to several years, the latter is the commonest form and has been divided by Nocard into three stages.

(1) The primary stage in which the principal symptoms are lesions on the genital organs, urethral discharge, œdema of the penis and sheath, which at this stage are hot and sensitive, followed by ulcerations on the penis, sheath and genital mucous membranes, but these latter symptoms are not always constant. In the mare the symptoms are less marked, and at the beginning may only consist of a little swelling of the lips of the vulva, the vaginal mucous membrane is a bright red colour, micturition is frequent and a little sticky mucous discharge may be noticed. In the stallion frequent partial erection of the penis is noticed, ability to cover a mare is still maintained, but it has been noticed in India that at this stage they are already sterile, and that the trypanosomes are found in the semen. In both sexes these symptoms may also be accompanied by fever, the appetite continues good but the animal's nature becomes altered and vicious.

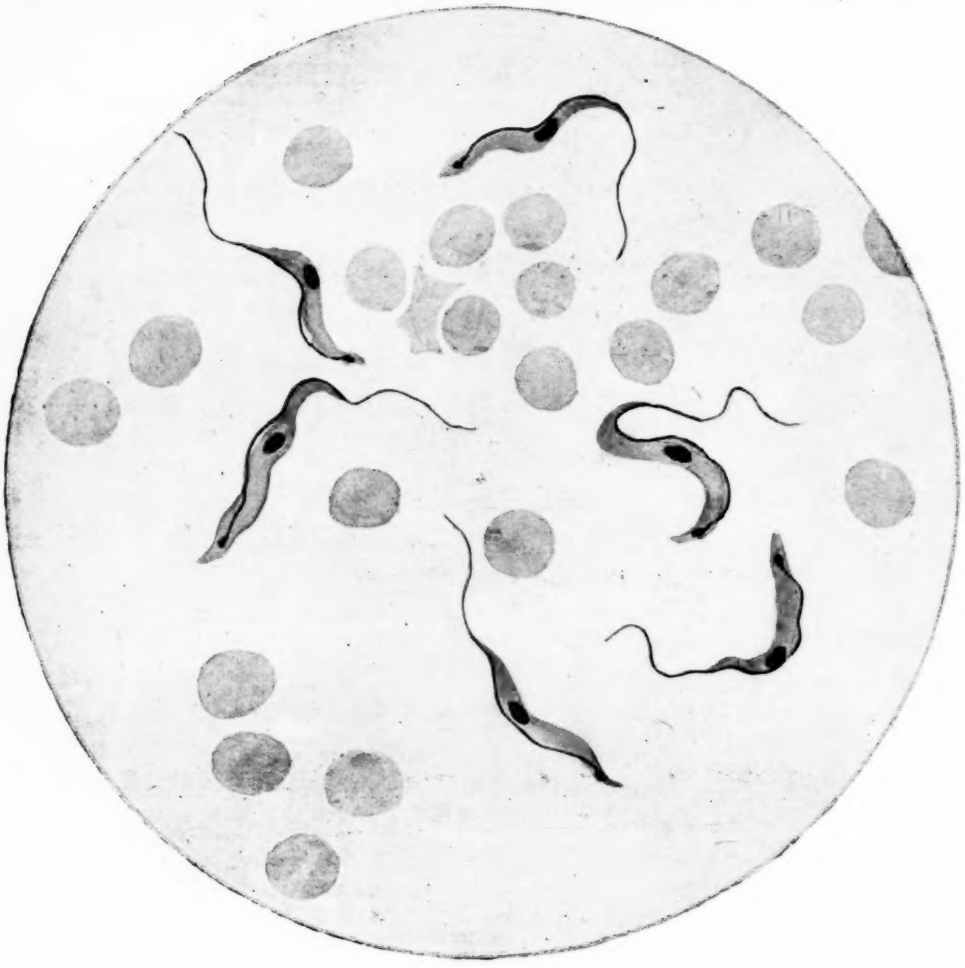
(2) Secondary stage. This is characterised by the appearance of the so-called "plaques" which consist of numerous well-defined ananthematous kind of swellings which make their appearance on various parts of the body about six weeks to two months after infection has taken place, they vary in size from a two shilling piece to the size of your hand, and have been well described as an appearance as if a coin had been slipped in under the skin, their period of duration is very fluctuating and may vary from 24 hours to 8 days—the hair on the part is noticed to be standing on end, and according to Nocard is stuck together by a slight serosity which has been exuded. Progressive anæmia is now well marked, and according to Pease the glands, especially the inguinal, become enlarged and may suppurate. The swellings of the genitals become hard and chronic, the appetite continues good and is in fact almost ravenous—the animal is found to be frequently lying and some difficulty in getting up is occasionally noticed, the gait of the hind legs is altered and symptoms of paralysis begin to show themselves. Intermittent fever is frequently present and complete inability to cover a mare is now almost always found to exist, infected mares become regular nymphomaniacs, they do not hold to the horse, and, according to Pease, mares in foal abort at about six months.

(3) Tertiary stage. This is characterised by rapid progressive anæmia, loss of co-ordination, complete paralysis and death, recovery being exceedingly rare. The total duration of the disease would appear to vary from two months to two years—but on this point there seems to be some considerable difference of opinion. in Donkeys the symptoms are very similar to those in the horse, but the disea e develops much slower and is therefore frequently only recognised after a large number of animals have been infected (Laveran and Mesnil).

Unlike most other trypanosomes, the organism of dourine is not so easily found in the peripheral blood, but it is almost always present in the discharges, in the seminal fluid and in the fluid and blood from the œdematous swellings, particularly from the plaques immediately they make their appearance. (Baldrey: *Journal of Comparative Pathology*, March, 1905). Throughout this disease the fever is intermittent, but it seldom or never goes very high, a point which has been noted in comparison with Surra, in which disease the temperature runs up much higher. Pease has found that pariah dogs in India have a remarkable immunity against dourine but are most susceptible to Surra, which is another useful differential diagnosis. The presence of glucose in the urine of horses suffering from dourine is a symptom to which attention has apparently only lately been drawn. (Roger: *Revue Vétérinaire*, December, 1904.).

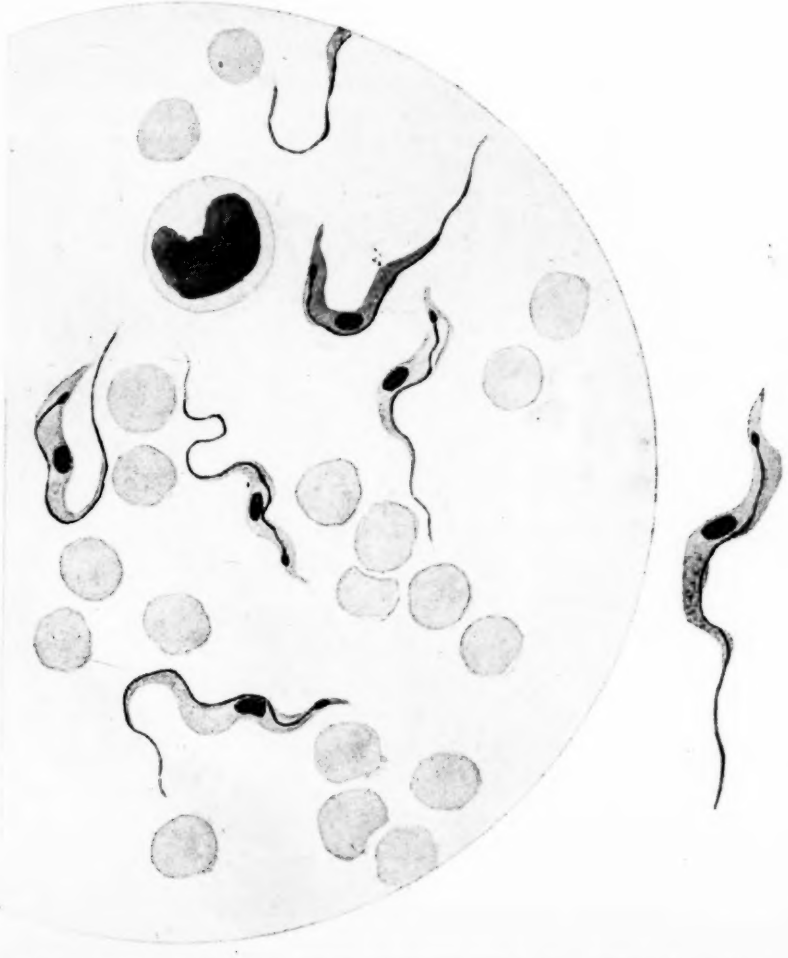
Post-mortem Appearances. These consist chiefly of a round cell infiltration around the sebaceous glands and a yellow gelatinous exudation beneath the skin, marked wasting of the muscles, and absence of fat throughout, the bones are fragile and spongy, and may be infiltrated with gelatinous material. The spleen is invariably enlarged. The Lymphatic glands are enlarged and soft and contain reddish yellow fluid. The brain is dropsical, and the spinal cord, particularly in the lumbar and sacral region, is found to be reddish in colour and undergoing degeneration.

The testicles are soft and atrophied, and in many cases have been entirely replaced by fibrouse tissue. In the female, the vaginal mucous membranes are marbled, thickened and present hæmorrhagic patches. (Annett's Liverpool Lectures, 1904.)



TRYPANOSOMA GAMBIENSE
(Sleeping Sickness).

GLOSSINA MORSITANS.
(Tse Tse Fly),
about 3½ times natural size,
from actual specimen.



T. EVANSII. (Surra).

Drawn by Mr. A. C. Duncan, M.R.C.V.S., Ryl. Vet. Coll. of Ireland, from actual specimens seen through the microscope.

Galziekte.

This is a disease which is found in various parts of South Africa, where it has been known under the names of gall sickness, bilious fever, jaundice, etc., for some considerable time, but the causal agent, a trypanosome, was only discovered by Theiler in 1902. The disease is apparently peculiar to cattle, and is frequently found complicated with other diseases particularly piroplasmosis and spirella.

The organism is the largest trypanosome which has yet been described and measures 20-70 *u* long by 2-6 *u* broad—its other characteristics are its mobility, its long flagellum and tapering posterior extremity. Multiplication takes places longitudinally. According to Theiler transmission takes places by means of flies, and he mentions the hippobosca, rufipes and maculata as the most probable carriers of the disease, and in view of the statement that the last named insect is supposed to have been only recently imported from India, it may be in some way connected with a trypanosome recently discovered in that country. The incubative period obtained by experimental inoculation has been found to be four to six days.

The chief symptoms are those of bilious fever and chronic pernicious anæmia, but owing to the frequency with which this disease is complicated with others—the symptoms peculiar to itself are not quite accurately known.

The mortality according to Theiler is only about 12 per cent. and the post-mortem appearances principally consist of enlargement of the spleen, jaundice, and those of general anæmia—a trypanosome very similar to that just described has recently been discovered in India by Durrant and Holmes, in fact from all accounts it would appear to be almost identical, it was found complicating their rinderpest inoculations and in conjunction with piroplasmosis. The disease is confined to cattle and the organisms measure 60-80 *u* by 2-4 *u* they appear to cause no distinct symptoms and only proved fatal in a few cases.

Gambian Horse Sickness.

This is a disease which exists amongst horses in Gambia, and is due to the presence in the blood of a parasite discovered by Dutton and Todd in 1902, to which the name of trypanosoma dimorphum has been given, and similar organisms have been found in the blood of sheep in the Congo (Annett). The organisms, as the name denotes, consist of two forms, they are characterised by their great want of uniformity, both in shape and size, and in a fresh specimen by their slow movements compared with those of other trypanosomes. As a matter of fact, Dutton and Todd described three forms :—(1) A tadpole form. (2) A long form and (3) a short or stumpy form, however only two forms, viz., a long and short are now recognised, and the name dimorphum suggested by the Professors of the Liverpool University Tropical School of Medicine is now generally accepted.

The long variety measures 20-25 *u* and the short one never more than 12 *u*. The flagellum and undulating membrane are neither of them at all well developed. The posterior extremity of some are pointed, while others are rounded, and when the organism is stained, the blue colouring is intense.

The disease produced is characterised by symptoms very similar to nagana, only it runs a much longer course, lasting a year or more. The incubative period obtained experimentally is 11 to 12 days. The disease apparently naturally only affects horses, but other animals are susceptible to inoculation.

Transmission probably takes place by means of some winged insect common to that country. Multiplication of the organism takes place longitudinally and the mortality in this disease is stated to be small (Annett).

Sleeping Sickness.

According to Laveran and Mesnil this disease was first observed amongst natives in the neighbourhood of Sierra Leone at the beginning of last century by an Englishman named Winterbottom, but it was not until December, 1901, that Dutton discovered the organism—the trypanosoma Gambiense—in the blood of a European who had been six years in the Government service on one of the river steamers in Gambia, he had been at the time some seven months in hospital suffering from fever, of which he had previously had several attacks. Dutton and Todd in the following year were able to demonstrate the organism in the blood of large numbers of natives examined, and a full account of their work has been published through the Liverpool University Press. The disease has since been found to be prevalent in several parts of West and Central Africa, and also in Uganda.

The organism is characterised by the length of the flagellum, which is often from a third to a quarter of the total length, which varies from 17 - 28 *u*. The nucleus is oval and is situated towards the anterior extremity, and when stained the centrosome is well marked. The period of incubation is very indefinite. The disease has two stages :

(1) The primary stage is principally marked by intermittent fever, and the presence of the trypanosomes in the blood in small numbers.

(2) The secondary stage is characterised by rigors, inclination to lie about, a form of hectic fever developes, followed by anæmia, general exhaustion, œdematous swellings, coma and death.

The primary stage appears to last for several years, and the secondary from four to eight months. The disease is communicable to all laboratory animals, as well as horses and donkeys. Transmission takes place by one of the tsetse flies, more especially the Glossina palpalis. The mortality amongst human beings is 100 per cent. (Christy, Liverpool Lectures, 1904).

Trypanosomes of Birds, Reptiles, and Fishes.

Several forms of trypanosomes found in birds, reptiles, and fishes are described by Danilowsky, Laveran, Mesnil, Dutton, Todd and others, but I am afraid that there is hardly time to touch upon them in this paper, except that in passing I might draw your attention to the fact that the Vienna Veterinary Institute is constituting a special department for the investigation into the diseases of fish.

Treatment of Trypanosomiasis.

In the actual treatment of the various diseases caused by trypanosomes much remains to be done, and so far very little satisfactory progress has been made. Of the many different drugs used from time to time the most encouraging results have apparently almost invariably been obtained with certain compounds of arsenic, and arsenious acid, and if given in the early stages this drug certainly appears to have some curative effect, in reducing the number of organisms in the blood, but the patients finally succumb to the disease, and so far as I can gather the drug has seldom or never done more than prolong the course of the illness.

Recently the use of a red colouring substance called trypanroth given in the form of a subcutaneous injection has been advocated by Ehrlich and Shiga, who appear to have had some considerable success with it in the treatment of mal de caderas in rats and mice, but so far no satisfactory results have been obtained with it in the treatment of larger animals.

Injections of human serum have also been tried, more especially in the treatment of nagana in small animals, and combined with arsenious acid Laveran and Mesnil

claim to have had some very fair success. The extension of this idea, that is, injection of animals with the serum of those naturally immune to any particular variety of the disease may therefore meet with some success and has already been suggested by the last named authors. In the treatment of dourine, castration of stallions affected with the disease in the early stages appears to have some beneficial effect and, if nothing else, it is an effective method of checking the spread of the disease when destruction is not being enforced.

These are the best and at present the only effective methods of dealing with trypanosomiasis. Briefly, they consist of immediate destruction of all animals in which the trypanosomes have been demonstrated, protection against the bites of the flies and other insects which transmit the disease, and if possible destruction of their breeding places, by draining infected districts, as suggested for surra, together with preventive inoculation. In nagana the steps to avoid transmission of the disease by the tsetse fly are wonderfully effective, they consist of covering the animals with complete suits, keeping them housed during the day time and only marching or allowing animals out to graze at night in the tsetse fly districts.

Animals which have recovered from trypanosomiasis are immune to another attack of the same variety, and their serum or the serum of non-susceptible animals when simultaneously inoculated with the organisms of the disease is said to produce immunity, but it must be remembered that animals which have been immunised against one form of the disease have been found susceptible to others. Special prophylactic measures are necessary for the various forms of the disease, and more especially is this the case with dourine.

It goes without saying that a thorough practical experience combined with the necessary scientific knowledge is the first object to be obtained, and it is therefore very gratifying to read in last week's *Veterinary News* that in one centre at least a step in the right direction was being made, and that a leading man in the shipping trade in Liverpool had notified his willingness to give free passages to two veterinary students selected from the Liverpool University Veterinary School to proceed to Baltimore, United States, for the purpose of studying the disease. Surely in a country like Ireland, so interested in horse breeding, the time has come for some one to make a move in a similar direction—for an endeavour to make more adequate preparation for dealing with the prevention of this disease and so put the country in a position ready to meet with all emergencies, instead of waiting until the horse has run out to shut the door

I am indebted to Mr. A. C. Duncan, M.R.C.V.S., of the Royal Veterinary College of Ireland for the illustrations of trypanosomes and tsetse fly here reproduced.

Thanking you, Mr. President and gentlemen, for your kind attention, I trust that the subject of my paper has proved of interest to you all, that it will lead to a useful discussion and be the means of bringing home to you and many others the necessity that undoubtedly exists in this country for adequate protection against the importation of these fatal diseases.

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Before commencing the discussion of the paper the members took an opportunity of examining the slides which had been prepared to illustrate it; these, with three microscopes, had been placed at their disposal by the kindness of Prof. Mettam.

Discussion.

Mr. McKenny said they had listened to a very able paper, he might say a concentrated essence of quotations from many of the ablest writers on the subject of this micro-organism. He thanked Captain Pallin for the concise and precise manner in which he had submitted the subject for their consideration. No doubt the busy practitioners were always grateful for contributions of condensed knowledge regarding the scientific aspect of diseases. The speaker hoped the discussion would be a good one, especially as he saw Prof. Mettam and others taking copious notes.

Colonel Blenkinsop had not expected to be asked to make any remarks or to open the discussion on Captain Pallin's very able paper. The paper had traversed a very wide field of research and had been very carefully compiled. A rather complicated subject had been placed before them in a way easy to understand. The diseases due to trypanosomes were daily becoming better known, but it was very extraordinary that so large and easily demonstrated an organism should have remained so long unrecognised by professional men in the blood of their patients suffering from diseases due to these parasites. He himself had experience of two diseases due to trypanosomes, namely dourine and surra. Nagana he had seen but had never actually diagnosed microscopically, the two former diseases he had so recognised. It was a very easy matter to diagnose surra. There was one point in connection with surra which he would like to emphasise, and that was that the discoverer of the surra trypanosome had not received the credit which was his due. It was the first pathogenic trypanosome demonstrated, and was found by a member of their profession, Inspecting Veterinary Surgeon* Griffith Evans, of the Army Veterinary Department, in the year 1880. Some six years later Bruce discovered the trypanosome of nagana, and his name was at once made famous throughout the world. They, as a profession, had allowed Griffith Evans' great discovery to be ignored. He remembered going to India as a young veterinary surgeon in 1883, and although Evans' discovery had only recently been made, he had never heard it mentioned at the Royal Veterinary College in London. Such a subject as tropical medicine was hardly known at that time, and bacteriological teaching in the veterinary schools

* G. J. Evans. M.D., C.M., Brynkynallt, Bangor, N. Wales.

did not exist. During the ten years he was in India he had seen surra diagnosed as all sorts of different diseases, and only comparatively few veterinary surgeons at that time were capable of using a microscope in order to confirm their diagnosis. It was to this want of general scientific education amongst the members of the profession at the time of Evans' great discovery that he attributed the lack of recognition with which it was received. Papers like that of Captain Pallin were one of the most valuable means of keeping the busy practitioner in touch with the more recent scientific discoveries in tropical research, and he thought it was a great advantage to all to have an opportunity of hearing and discussing such papers. These diseases were at present unknown in Ireland, but they might any day be introduced. When epizootic lymphangitis was first recognised as having been introduced into this country, he well remembered meeting in Dublin an examiner of the Royal College of Veterinary Surgeons and they were talking about the disease. The examiner said that he knew nothing about epizootic lymphangitis, had never seen a case of the disease, and did not want to know anything about it. Well that was the way he thought that many of these diseases were looked upon by their members, and it was very much to the detriment of their profession that such apathy with regard to scientific knowledge existed. As regards dourine, he thought there was great danger to be feared from the introduction of that disease into Ireland, and if it did come to this country it would be the cause of greater loss than glanders, or almost any equine malady. It was a disease that the veterinary profession in Ireland especially should thoroughly study, and they should qualify themselves so as to be able to recognise it. There was a very good article on the subject in *The Journal of Comparative Pathology and Therapeutics* for last March, by Captain Baldrey, illustrated with very good photographs, and from the description given he thought there should be no great difficulty for a professional man to recognise the disease, or at any rate to suspect the presence of the disease and call in those who had had experience of it in other parts of the world. There were, in his opinion, a great many more diseases caused by trypanosomes which would eventually be recognised, and it was only by constant microscopical examination of material, especially blood films, that many diseases of which the cause is at present only conjectured, would be eventually accurately diagnosed. He thought that Prof. Mettam might be able to say a good deal on the paper as he saw he had taken copious notes.

PROF. METTAM had listened with very great pleasure to Capt. Pallin's paper. It gave an excellent epitome of what was known regarding those Trypanosomes and Trypanosomiasis, and he quite agreed with Colonel Blenkinsop that the future would reveal a large number of diseases as being due to animal parasites—in fact they were only on the fringe of the whole subject. The tendency nowadays was to assign those diseases which had hitherto escaped the attention of bacteriologists to a cause which was probably one of those protozoa showing the inter-relation between diseases it was very interesting to find that the disease known as "Sleeping Sickness" for instance, in man was due to a micro-organism which is the cause of such serious animal losses in different parts of the world. Capt. Pallin claimed for Dutton and Todd the discovery of the organism causing sleeping sickness. He (Prof. Mettam) thought that Castellani, in Uganda, was the first to show that it was due to a trypanosome. Castellani had found these micro-organisms in the cerebro-spinal fluid after centrifugalising it. Schaudinn too had by his researches done much to increase our knowledge of the disease. There was one very interesting point in the life history of the Trypanosomes and that was the spirilla stage, to which certain diseases in animals and man were due, such as relapsing fever in man, disease in geese in North Africa, disease in birds in Brazil, and disease in cattle in the Transvaal. Speaking about animal parasites in general, it is extremely interesting to know that human syphilis has recently been shown to be connected with these parasitic diseases; there were very few published accounts about the matter at the present moment, but his opinion was positive on the matter. It was due to an animal parasite—one of the protozoa—and that animal parasite had been found in all the lesions of the human subject as well as in the experimental cases. They would remember that human syphilis had been experimentally transmitted to monkeys of various kinds. It was extremely interesting to him, as one studying these matters, to recognise that the two severe genital diseases in animals were due to a parasite belonging to the animal kingdom. Of course he did not say that there was any connection between the two parasites.

He scarcely agreed with the nomenclature adopted by Capt. Pallin to describe the small body at the posterior end of the Trypanosome. Capt. Pallin called it a "Centrosome," while he (Prof. Mettam) would prefer to call it a Blepharoplast. It was very interesting to note that they found trypanosomes readily, easily, in rats; in Dublin nearly three out of every four showed them. If their blood was examined for these micro-organisms they could be seen in any number, moving about rapidly in a fresh field; they could be found without any difficulty on staining, though it was not always an easy thing to stain them. The pictures they saw hanging at the end of the room were taken from diagrams prepared at the Pasteur Institute, but they could scarcely expect such details to be brought out by the ordinary methods of staining. To his mind the Romanowski method was the best for cases of this kind.

There was a small point on which he would like to correct the lecturer. He described the Tsetse fly, *Glossina morsitans*, as resembling the "Horse fly"; well, they had specimens at the College sent by a former student, now on the Uganda Transport service, and the flies were practically similar to our house fly, only somewhat larger. It was, no doubt, a slip in reading. The lecturer had said something about the corpuscles being crenated in certain forms of Trypanosomiasis, and he would like to ask him if the corpuscles were crenated in the body? In some of these blood diseases the corpuscles crenate very rapidly, and he would like to know if the change described took place in the blood stream. He would also like to know if Hæmoglobinuria was much associated with these diseases caused by blood parasites. Capt. Holmes mentioned one very important point in his treatise, namely, that if cattle were inoculated with surra they do not suffer severely from surra, but their blood was infective even after an interval of months. He would like to ask Capt. Pallin if the blood of cattle that had not been inoculated with surra, were infective for that disease? In other words do cattle suffer spontaneously—if it may be so called—from surra, but in such a mild form that practically its diagnosis was not possible? And again, if blood were taken from such animals and injected into a susceptible animal would the disease then arise? He asked that for this reason, that in the case of some other form of blood disease due to animal parasites, the attacked animal only becomes immunated, and does not suffer from the disease it naturally should; but the blood was infective and would set up the disease in a susceptible animal. Animals may suffer from Texas fever which may not be recognisable, but if you inject their blood into a susceptible bovine Texas fever is set up just as rapidly as if the first animal suffered from a well marked recognisable form of piroplasma in the blood. He did not know what experimental evidence Capt. Holmes had for his statements, and would like that point cleared up.

As to dourine he quite agreed that this was a disease they ought all be ready to recognise, and to keep outside the country at any cost; it would be disastrous if it got among our equine population. They knew, of course, it was only found in breeding establishments—in stallions at the stud, and mares joining for service. He would like to ask if the disease could be transmitted to a sound mare with the mucous membrane of the genital passages whole and sound, or if there must be some wound in the passages through which the trypanosome could gain admittance from the semen? In the matter of prophylaxis there was one observation of the reader he would like to question—perhaps he misunderstood him—but he suggested that *all* animals suffering from trypanosomiasis should be destroyed. If that were done, of course, there would be no more of the disease to consider. He presumed he meant the small animals, practically worthless, which might be carriers of the disease.

He had nothing further to say except to re-echo what had already been said that the Association were under an obligation to Capt. Pallin for his very lucid description of those diseases known by the general term Trypanosomiasis."

Prof. WOOLDRIDGE joined very heartily in the eulogium of the paper. The first thing that had struck him on hearing it was that Capt. Pallin could hardly have realised fully what a tremendous task he had set himself when he undertook a detailed description of at least eight separate diseases with the symptoms, post-mortem appearances, and differential characters of the causal organism. He (Prof. Wooldridge) found that Prof. Mettam had anticipated him in almost every point he wished to raise. However, there were one or two left to him. First with reference to surra and nagana, in addition to the symptoms that Capt. Pallin had referred to, there was progressive paralysis. The symptoms commence as he related, and in the later stages unsteady gait comes on, followed by paralysis of the hind quarters. The latter symptoms appeared to be common to all the trypanosomiases of the horse referred to as mal-de-caderas and in dourine. It seemed to him that the symptoms of these trypanosome diseases might have been tabulated under a definite system, and that in that way the essayist could have saved himself a lot of trouble and repetition by first of all giving a series of symptoms of each, such as those of the genital organs in dourine for example, when he came to an account of the disease in question. He had also been struck with the reference to crenated corpuscles in the advanced case of trypanosomiasis, and the same questions occurred to him exactly as appeared to have occurred to Prof. Mettam, namely, was there actually crenation of the corpuscles *in circulation*? He had an idea that in the majority of cases any crenation was due to some fault in making the slides, such as having the film a little too thick, or not drying quickly enough. The corpuscles shrunk unequally, being attached to the slide only at certain points of their periphery, and becoming crenated during the slow drying of the film. Capt. Pallin said that in Calcutta about 29 per cent. of the rats were found affected. In this country they found trypanosomes in upwards of 50 per cent.

A very interesting point of comparison struck him with reference to the piroplasmata used in the trypanosomes, namely, that both were blood parasites, and both were very largely, though not exclusively, inoculated by cutaneous parasites. The trypanosome, as had been pointed out to them, was an extra-corpuscular parasite, and in almost all cases when the intermediary host had been discovered, the inoculating agent had been a fly, a true insect. In the case of rats, it had been suggested to be fleas. On the other hand, the piroplasma was an intra-corpuscular parasite, and in the majority of cases the inoculating agent has been proved to be an arachnidean parasite, a tick and not an insect.

There was one other point which he wished to refer to, viz., the association of trypanosomes and spirilla. He thought it was Theiler himself in his report on galziekte (gall sickness) who referred to the presence of a considerable number of spirilla in the blood of cattle affected with that disease, and he regarded them as being immature forms of the trypanosome and responsible for the disease. That being so, he would like to ask if it is not probable that some of those diseases which have been ascribed to spirilla may be due to trypanosomes much smaller than those with which we are now getting familiar?

Mr. CARGILL PATRICK had listened with pleasure to Capt. Pallin's paper, though he was afraid he had not been able to grasp many points for discussion. There was one matter, however, he would like to know a little more about—it was specially interesting to the country practitioner—and that was whether iron, or a combination of iron with arsenic, had been tried as a curative agent in connection with these diseases. He would also like to ask whether trypanosomiasis is connected in any way with piroplasmata of cattle or Rhodesian redwater. Was there no connection between the two? Prof. Mettam had asked a question which gave rise to another in his mind. Certain cattle had Texas fever in a very mild form which did not show. How were they to recognise the disease in the first animal? And if the blood of that animal were injected into another would it confer immunity from the disease to number two?

Prof. METTAM said that if an animal recovered from redwater it was immune to any further attack.

Capt. PALLIN thanked them very much for the manner in which they had received his paper on the rather large subject he had tackled. He felt indeed that he was rather trying to fly before he could walk in attempting to deal with such a difficult subject. He was afraid that many of the questions he was asked by the critics—especially those of Prof. Mettam—were a bit too abstruse for him to endeavour to satisfactorily answer. As to the matter of Dutton and Todd having been given the credit for discovering the cause of sleeping sickness, there was a difference of opinion. Prof. Koch gave the credit to Castellani, and he thought, reading between the lines, that Prof. Mettam was right, and that Castellani did as a matter of fact discover the trypanosome of sleeping sickness in the cerebro-spinal fluid, but Dutton and Todd appeared to be the first to write an account of the disease, and at the same time show clearly that that organism was the cause of the sickness, and he thought it was for that reason they got the credit of its discovery, although probably the other was really the first man who discovered the organism.

Prof. Mettam found fault with the word centrosome as applied to the second nucleus of these parasites. Well that was the name that seemed to be generally accepted, and he (Capt. Pallin) was certainly not going to suggest a new name for it. "Horse" fly for "house" fly was merely a misprint. It was quite possible that Profs. Mettam and Wooldridge were correct as regards the crenated corpuscles he had described. They may possibly have been merely accidental, and had nothing whatever to do with trypanosomiasis.

As regards hæmoglobinuria in surra personally he had not seen it but had no doubt it existed in some cases. It appears to be generally acknowledged that cattle rarely suffer from surra; but recent observations by Holmes and others seemed to lead one to think that cattle do suffer from surra, but in a very mild form, and it was only that very day he was reading in a paper that surra in cattle had been recognised by some French authors again.

Col. BLENKINSOP thought it was Professor Nocard who

had pointed out that surra had been introduced by Indian cattle into Mauritius.

CAPT. PALLIN agreed with Prof. Mettam that in the matter of prophylactic measures it would be a very drastic step to slaughter all the animals in South Africa suffering from these diseases, as there would be not be many left. Prof. Wooldridge referred to the frequency with which paralysis was found to be a symptom. He thought he omitted mentioning in his paper that in both dourine and mal de caderas the authorities make special mention of the fact that trypanosomes were found in the cerebro-spinal fluid, and possibly, therefore, they exist in the fluids of all animals suffering from trypanosomiasis, and the presence of these organisms in that fluid undoubtedly produces the symptom peculiar to the various forms of disease in which paralysis had been noted.

We had no doubt that Prof. Wooldridge's figures (50 per cent.) represented more accurately than his the proportion of rats showing evidence of the existence of trypanosomes in their blood.

Mr. Patrick had asked whether iron and arsenic had been used for these diseases. He had stated in his paper that almost every drug had been tried, but that arsenic had been found to give the best results; and, of course, iron had been used, as also had salt. In fact, in India salt is issued to Government horses, so much per diem, to be mixed with their food, and he thought the idea originally came from the fact that salt had been found useful for allaying these diseases and was especially used for the prevention of surra. As regards these diseases being connected with piroplasmosis, it would appear to him from recent research that it is very probable they are connected; but at the same time he wondered if it were actually connected with the piroplasmosis that they had not seen trypanosomiasis in this country.

A vote of thanks to Capt. Pallin for his instructive and exhaustive paper, proposed by Prof. Mettam, and seconded by Mr. Patrick, was carried unanimously.

Prof. METTAM proposed a vote of thanks to the President (Mr. McKenny) for his inaugural address, Mr. Patrick seconded the vote, which was carried with acclamation.

CHAS. ALLEN, *Hon. Sec.*

ANTHRAX AT CULLOMPTON.

VETERINARY SURGEON AND FARMER FINED.

A case of considerable interest to farmers was heard at Cullompton Sessions on Monday, June 19, when John Knowles, junr., farmer, of Cullompton, was summoned for (1) burying a bullock which died of anthrax, and (2) not reporting the same to the police on the 3rd inst. Alfred John Down, veterinary surgeon, of Sampford Peverell, was summoned for directing the bullock to be buried contrary to an order of the Board of Agriculture. The Magistrates were: Messrs. T. Turner (in the Chair), W. J. A. Grant, H. G. New, and J. W. Clarke.

Supt. Vyvyan prosecuted on behalf of the police. Mr. J. Rooth (barrister) appeared for defendants.

Supt. Vyvyan said that on May 27th Mr. Knowles, junr., bought a heifer and calf by auction at Honiton market. On Friday, June 3rd, the heifer became ill. On Saturday morning Mr. Down was telegraphed to, but the heifer died before his arrival. Mr. Knowles asked if he could have a post-mortem examination, as he had received a warranty with the animal. The heifer was cut open in the presence of Mr. Down by Mr. Knowles, senr. Mr. Down became suspicious of anthrax, and asked Mr. Knowles to cut off an ear of the animal for the purpose of examination. After this had been done, Mr. Down ordered the animal to be placed in a pit six feet deep and covered with lime. He also ordered that the instruments should be disinfected, and that Mr. Knowles, senr., should wash his hands. The police did not receive information of the case until the 6th inst. The pit where the animal was buried was in rather dangerous proximity to a well, which was contrary to the Anthrax Order.

P.C. Lewis, Clysthidon, deposed that he received information from Mr. Knowles, junr., on the 6th inst. that a bullock which he had bought had died of anthrax. Mr. Knowles, senior, undertook to open the animal, as he said his hands were sound. He (witness) was told that a dog ate a bit of the carcase, but it had not hurt the dog. Mr. Knowles, junior, told him he did not know it was anthrax until the 6th inst. The calf which was purchased with the heifer was sold on the 5th inst., a day before his (witness's) visit to the farm.

The Magistrates' Clerk (Mr. Burrow): Are defendant and Mr. Knowles, senr., alright?

P.C. Lewis: Mr. Knowles, senr., has had a very bad arm, but I think he is gradually improving.

Mr. Knowles, junr., said that at the time the animal died he (Knowles) did not know the heifer was suffering from anthrax, and he conjectured the disinfecting process was a mere matter of course. He noticed a little blood issuing from the nose.

At this juncture a telegram was handed in to the Bench which Mr. Down had received from London respecting the examination of the ear of the heifer. The telegram read, "Undoubtedly anthrax."

Mr. Rooth intimated there was no case for him to answer. He held that before Mr. Down could be found guilty under the Order it was obligatory on the police to show that he knew the animal died of anthrax.

The Chairman remarked that the members of the Bench were not inclined to discuss the case.

Mr. Down, in the box, said there was nothing in the symptoms to prove the animal had suffered from anthrax, and he could not form any opinion after the post-mortem examination. The post-mortem revealed acute inflammation of the bowels, which might be due to diseases other than anthrax. He noticed that the liver was slightly congested. The spleen was almost normal; it was very slightly enlarged, whereas in cases of anthrax the spleen was usually found to be enormously enlarged.

Mr. Rooth: Why were you anxious to know what the animal died from?

Mr. Down: In the interest of the farmer. At the time the animal was buried he had no idea the animal died of anthrax.

Mr W. B. Nelder, veterinary surgeon, of Exeter, said he should have done the same as Mr. Down did had he been called in. Veterinarians relied on the spleen for the detection of anthrax, and it was simply impossible to tell whether an animal died from anthrax without a microscopical examination.

The Chairman said the Bench had given the case careful consideration, and had decided to inflict a fine of £2 2s.

The case against John Knowles, jun., was then taken. He pleaded not guilty to the first offence alleged, but admitted not reporting the case to the police.

The first case was withdrawn on the payment of costs. In the second case he was ordered to pay 6s. and 4s. 6d. costs.

Mr. Knowles, senr., underwent an operation a few days ago, and had pieces taken out of his right arm from the wrist to the elbow. He passed a very good night, but was worse this morning, and Dr. Gidley was hastily summoned. The doctor was not called in until nine days after the post-mortem examination of the heifer was performed.

DISEASES OF ANIMALS ACTS 1894 TO 1903. SUMMARY OF RETURNS.

Period.		Anthrax.		Foot-and-Mouth Disease.		Glanders (including Farcy)		Rabies. Cases Confirmed.		Sheep Scab.	Swine Fever.	
		Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Dogs.	Other	Out-breaks	Out-breaks.	Slaughtered *
GT. BRITAIN. Week ended June 17		18	27	..	..	31	50	..	..	2	20	62
Corresponding week in	1904 ..	14	19	..	..	29	53	..	..	4	42	138
	1903 ..	9	10	..	..	40	63	..	..	9	63	271
	1902 ..	16	21	..	..	17	36	..	2	5	57	185
Total for 24 weeks, 1905		504	734	..	..	567	1013	..	..	643	377	1780
Corresponding period in	1904 ..	504	789	..	..	692	1279	..	..	1050	718	3607
	1903 ..	399	623	..	..	624	1024	..	..	1146	783	3603
	1902 ..	358	599	1	120	514	963	12	2	1076	803	3834

Board of Agriculture and Fisheries, June 20, 1905.

IRELAND. Week ended June 10		..	..	..	..	..	..	..	..	..	1	72
Corresponding Week in	1904 ..	..	..	..	..	..	..	..	..	3	7	65
	1903 ..	..	..	..	..	..	..	..	..	4	5	27
	1902 ..	..	..	..	..	..	..	..	..	1	6	77
Total for 23 weeks, 1905		2	2	..	..	10	28	..	..	216	12	422
Corresponding period in	1904 ..	2	2	..	..	4	19	..	..	359	55	1416
	1903 ..	1	2	..	..	1	2	..	..	383	46	1302
	1902 ..	..	..	..	..	4	19	..	..	427	78	1512

Epizootic Lymphangitis, Week ending Jan. 14, 2 cases; Feb. 25, 2; March 25, 10: May 27, 1; June 10, 1.

Department of Agriculture and Technical Instruction for Ireland, (Castle Street), Dublin, June 15, 1905.

NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection.

Royal College of Veterinary Surgeons.

A special meeting of Council of the Royal College of Veterinary Surgeons was held at the College, 10 Red Lion Square, W.C., on Wednesday, June 21st, 1905, Mr. J. A. W. Dollar (President) in the chair. The following members were present: Messrs. Abson, Banham, Barrett, Cope, Duck, Fraser, McI. McCall, M'Fadyean, Mulvey, Penberthy, Stockman, Shave, Thomson, Villar, and Wragg, Mr. A. W. Hill (secretary).

The SECRETARY read the notice convening the meeting, as follows:—

"June, 1905.

Owing to an unforeseen contingency I have reluctantly been compelled to call the Council together before the date of the usual quarterly meeting. The facts are as follows: The date originally fixed (in July last) for the written examinations in London was July 7th. On this understanding several students of the Royal Veterinary College, Camden Town, entered their names for the examination of the London University and have since paid their fees. The London University examination is held on July 10th. On Mr. Hill making application some month or two ago for the hire of the usual examination hall this was found to be engaged on the 7th July (the date originally fixed), and the Council fixed a new date for the examination, viz., July 10th. As the aforementioned students of the Royal Veterinary College had entered their names for the London University examination on the basis of the Council's former decision they are now confronted with a very serious situation.

I purpose asking the Council to permit a special written examination for these two or three students to be held on the 7th July as presenting the least objectionable way out of the difficulty. Under these circumstances, if you live at a considerable distance, it will be a matter for your own consideration whether or not you will attend; but I would earnestly beg those members of Council who are in the neighbourhood of London to endeavour to be present.—Yours faithfully,

JNO. A. W. DOLLAR."

ABSENTEES.

The SECRETARY announced that letters regretting inability to attend the meeting had been received from Messrs. Carter, McCall, Locke, Mettam, McKinna, Simpson, and Williams.

The PRESIDENT: The object of the meeting is, I think, sufficiently explained by the circular letter which I issued with the notice convening the meeting. I have received from two members of Council letters regarding the object for which the meeting has been called, which perhaps I ought to read to you.

(The PRESIDENT then read a letter from Prof. McCall supporting the proposition to hold a special examination, and also a letter from Prof. Mettam dissenting from the proposition). I think I ought in justice to say that immediately the alteration in the date was determined on the schools were notified, and Mr. Hill informs me that he wrote to Dublin, Liverpool, and London informing them of the change, so that if Prof. Mettam received no notice either the letter must have gone astray or it must have been overlooked.

Mr. MULVEY: May we ask what were the circumstances necessitating the alteration?

The PRESIDENT: I believe the circumstances were these, that an application was made by Mr. Hill for the hall of the Royal College of Physicians and Surgeons on the 24th March last, and he was informed that they were unable to accommodate us for the written examination on the 7th July, and under those circumstances it was determined to take the date which was offered.

The SECRETARY: Yes, it was the only date they had, because of their own examinations taking place.

Mr. MULVEY: Was it not possible to obtain rooms elsewhere?

The PRESIDENT: I believe Mr. Hill made application in other quarters.

The SECRETARY: On several occasions we have tried, but they could not accommodate us for the July examinations. At the Law Institute they can accommodate only half the number, and we have always found it more convenient to hold the examinations where we usually hold them.

Mr. WRAGG: We have held examinations at the Law Institute.

The SECRETARY: Only for the lesser number, at the Christmas examination.

The PRESIDENT: How many students will you have?

Prof. M'FADYEAN: We will have 150.

Mr. WRAGG: How many can they accommodate at the Law Institute?

The SECRETARY: Then not more than 110.

Mr. WRAGG: What about now?

The SECRETARY: I do not know, and their fees are excessive. They are higher than we pay for the hall on the Thames Embankment.

Mr. BARRETT: What about the old University of London buildings? They have huge class rooms there.

The SECRETARY: You will remember, Mr. Mulvey, that at your request I made enquiries at the Society of Arts and at another institution?

Mr. MULVEY: That is some years ago. Is the room of the Society of Arts not available this time?

The SECRETARY: I did not enquire this time.

Mr. MULVEY: It is a pity that the date should have been upset in this way. I never heard anything of it till now.

Mr. VILLAR: That is what puzzles me, how it is that the Chairman of our Examination Committee knows nothing about it.

Mr. BARRETT: Nor did the President apparently.

The SECRETARY: Oh, yes, I immediately wrote to the President, and the next day a letter was sent round to the schools; there was no delay.

Mr. MULVEY: You see what has happened; it has upset all the arrangements, that is all.

Mr. FRASER: Do I understand that no other room could be obtained in London?

The PRESDENT: That is what I was given to understand—there was no other suitable room available.

The SECRETARY: We have tried.

Prof. SHAVE: Anyhow nothing can be done now. We cannot help what has been done or what has not been done. We have to find out when the students can be examined. It is no use talking about what might have happened.

Prof. M'FADYEAN: Except I suppose that if a room is available elsewhere, and we choose to pay whatever money we are liable for through having engaged the room for the 10th, I suppose there is no reason why we should not go back to the original date?

The SECRETARY: We have engaged the room now.

Prof. M'FADYEAN: I say that if we choose to pay whatever we have become liable for on that account we could go back to the original date?

The SECRETARY: Yes.

Prof. M'FADYEAN: But I submit a much simpler plan is to adhere to the altered date, because, after all, I do not think it probable that the altered date is in any way inconvenient to Prof. Mettam's or Prof. Williams' students, and the difficulty might be met by adhering to the altered date but allowing these few students who find it impossible to attend on the altered date to have a special written examination. I need hardly say there is no point in Professor Mettam's reference to Rule 59, or whatever it is, because we are not asking for a complete special examination, and the fact that they have their written examination on a different day, does not make an additional examination during the year, any more than the fact that all the students have their written and their oral examination on separate days. It is not a special examination, but I think the Council is under a moral obligation to see that these students are not debarred from presenting themselves for both examinations.

Prof. MCCALL: May I ask what is the examination these students are going up for?

Prof. M'FADYEAN: they are the first candidates for the new degree especially instituted by the University of London for veterinary students.

Prof. MCCALL: What degree is it?

Prof. M'FADYEAN: Bachelor of Science.

Mr. FRASER: I propose that the date be changed from the 7th to the 10th. Is that what you want?

The PRESIDENT: No. The 10th is the date at present fixed.

Mr. FRASER: And you wish to change that for the 7th?

The PRESIDENT: No; the proposition of Professor M'Fadyean was that the examination be held on the 10th, which is the date now fixed, and that a special written examination be allowed to these students on the 7th.

Mr. FRASER: I second that.

It was then resolved, on the motion of Prof. M'Fadyean, seconded by Mr. Fraser, that a special written examination should be held for the students concerned on the 7th of July.

Prof. M'FADYEAN: I take it that it is necessary to authorise the Secretary to write to the examiners in Classes A and B only, because there are no students concerned except in A and B. The Secretary should be instructed to write to the examiners in Classes A and B asking them to be kind enough to set additional papers.

Prof. PENBERTHY: A special paper, not an additional one, because the questions would then be out to the world.

Prof. M'FADYEAN: I mean another set of questions, and that the Secretary explain the circumstances to them. Arrangements have also to be made for the examination of these students. They could, of course, be examined on the 7th of July at the College, and I would suggest that that is the best course, if some member of Council would kindly undertake to act as a delegate to supervise the examination. This table is quite big enough; there are not more than three of them.

Col. DUCK: Would it be a uniform examination?

The PRESIDENT: Yes, perfectly uniform with the other examinations.

On the motion of Mr. Barrett, seconded by Prof. Penberthy, it was unanimously resolved that the examiners in Classes A and B be requested to supply a special set of papers and examine upon them, and that the request be accompanied by an explanatory letter, written by the Secretary, which should be submitted to the President.

The PRESIDENT: Will you now nominate a delegate?

Mr. FRASER: There is a rule by which the delegates are selected by the Secretary in rotation. That was an instruction to him some years ago.

The PRESIDENT: There is some little difficulty because

the possible list is so large. However, if there is no wish on the part of the Council to especially nominate a delegate, I will exercise my discretion as President and nominate one. That concludes the business of the meeting, and I wish to thank you very cordially for your attendance, and I regret very much the occasion which forced me to call you together.

On the motion of Prof. Penberthy, a hearty vote of thanks was accorded to the President for presiding, and the meeting terminated.

SPONTANEOUS GENERATION (?)

Some most remarkable observations have been made by Mr. J. B. Burke, of the world-famous Cavendish Laboratory, Cambridge. A preliminary note on the results of his work has been sent to the scientific Press, and will shortly be followed by a detailed paper. In brief, Mr. Burke appears to have witnessed and demonstrated the "spontaneous generation" of objects which can only be regarded as alive, by the action of radium on sterilised bouillon, such as is in constant use by the bacteriologist, as a culture medium. The experiments have been most carefully conducted, and have been rigidly criticised by the bacteriologists; whilst Dr. Sims Woodhead, of the Cambridge Chair of Pathology, has examined the objects found by Mr. Burke.

The test-tubes containing the beef-gelatin medium were inoculated with radium, and then most carefully sterilised, at a temperature much above boiling point, under high pressure, for half an hour. Similar tubes, similarly treated, save for the insertion of the radium, were placed in similar conditions and used as a "control."

After one or a few days there appeared in the first set of tubes a peculiar growth which, to the naked eye, resembled the sort of growth due to the multiplication of bacteria. These tubes had a peculiar action on certain kinds of light passed through them at the points where the growth appeared. The "control" tubes showed no growth, and had no such action on polarized light. The cultures—if that word is not begging the question—yielded sub-cultures by transference to other tubes, and these showed faint signs of independent growth.

The growths—if that word, also, does not beg the question—were soluable in warm water: as bacteria are not. Professor Woodhead examined them microscopically, and assures Mr. Burke that they are not bacteria. They are minute rounded bodies of varying size. The larger ones, according to Mr. Burke, possess distinct nuclei, and these can be seen in photographs taken through the microscope. *When they reach a certain size, they sub-divide.*

There are only two possibilities. Either these objects are crystals, or they are alive. They answer, in appearance, to no crystals hitherto known. They do not exhibit the reactions to light that are characterisic of crystals. They possess various properties irreconcilable with the hypothesis that they are crystalline. Tested in the light of that most profound definition of life which Herbert Spencer framed, "the continuous adjustment of internal to external relations," these things are alive. This definition excludes crystals, and even—so profoundly true is it—excluded by anticipation the legitimacy of attributing life to radium, which certainly answers to St. Thomas Aquinas' definition of life as "self-movement." They are produced, though after much longer periods, by other radio-active bodies besides radium itself. It has been possible to record, by photography, their most conclusive character, which is their sub-division when a certain limited size is reached. No crystal has this property, which is absolutely incompatible with any save the one amazing explanation. Hence, Mr. Burke has felt himself justified in calling these objects *radiobes*, to indicate that they are living things generated in lifeless matter by the action of radium. He appears to think that their origin is not to be found in the action of the radium on the molecules of the bouillon, but rather that they arise from the particles given off by the radium itself, the bouillon being merely a suitable food for their development.—*The Pall Mall Gazette.*

A New Stock of Variola Vaccine.

Dr. L. Voigt, Chief Vaccination Medical Officer at Hamburg, has succeeded recently in raising a fresh stock of variola vaccine. It will be remembered that the Lyons Commission (Dr. Chauveau's) in 1863 decided that human small-pox could not be transferred to the cow, and this opinion has persisted in France ever since, although numerous conversions of small-pox into cow-pox have been effected since then in Germany, in Switzerland, in England, and even in France itself. In 1881 Dr. Voigt succeeded in this in the Hamburg State Institution, and the lymph thus obtained had had a great success, for there is no lymph more powerful against small-pox than fresh variola vaccine lymph. Since 1881 Dr. Voigt has tried seventeen times in vain to effect another transference, but at last succeeded in the summer of 1904. Two attempts by him in the winter of 1893 to transfer variola from apes to calves were unsuccessful, although De Haan Eilerts in the Netherlands and Monckton Copeman in London have procured variola vaccine in this way. The new stock has been procured by first inoculating a rabbit with an emulsion of small-pox crusts in glycerine, shaving off the nodules thus produced (after killing the rabbit) and inoculating calves with the material thus acquired. The health of the calves was not affected, the temperature did not rise, and there was no sign of general eruption, except a trace in the second remove. The lymph from the second and third removes was used in August, 1904, in numerous revaccinations (of school children) with success, as the illustrations show, and then used for primary vaccinations with equal success. The vesicles appear much more slowly than with ordinary lymph. The possibility of accidental vaccination was excluded in these experiments.—*British Medical Journal.*

Clavicle Fractured by Muscular Action.

A collier, aged 20 years, in robust health, very muscular, and of good family history, was running at a good pace, when, turning sharply round a corner, he felt something give at his shoulder. On examination, the right clavicle was found to be fractured at the junction of its inner and middle third. The above is of interest as its occurrence in the manner described is most unusual. I am quite satisfied that there was no fall nor violence of any kind, and that the fracture was due entirely to muscular action.

WILLIAM BURNS, L.R.C.P. and S.
Abersychan, Monmouthshire.—*Brit. Med. Jrnl.*

Personal.

Mr. J. BLAKEWAY, of Birmingham, acted as judge in the Hackney, Harness, Saddle, and Local Harness Classes at the King's Heath Horse Show on Whit Monday.

Mr. G. E. BOWMAN, of Leeds, was one of the judges of Hunters and Hackneys at the Escrick Show.

Mr. JOHN TAYLOR, M.R.C.V.S., Cathkin, Rutherglen, is one of the recently elected members of the Highland and Agricultural Society.

Mr. J. Stewart M'Call, a son of the Principal of Glasgow Veterinary College, has been selected Junior Lecturer in Agriculture in the School of Agriculture, Ghizeh, under the Egyptian Ministry of Public Instruction. There was a large number of applicants. Mr. M'Call studied under Principal Wright, of the West of Scotland Agricultural College, for four years, and was a year in the Glasgow Veterinary College, whilst he is also a professional associate of the Surveyors' Institute. —*Scottish Farmer.*

THANKS TO ELECTORS.

To the Fellows and Members of the Royal College of Veterinary Surgeons.

Gentlemen.—Although not quite successful in gaining a seat on the Council at the recent election, I am extremely gratified at the great support accorded me, and beg herewith to thank most heartily the 584 gentlemen who voted so kindly in my favour.—Yours very faithfully,

E. Lionel Stroud.

CORRESPONDENCE.

PROFESSIONAL CONDUCT AND THE REGISTRATION COMMITTEE.

Sir,

I note that you did not publish my communication in reference to our Registration Committee in yesterday's issue. Perhaps you had not room, or felt timid about it, but you have nothing to fear as I *in writing* relieve you of all liability in connection with the matter.

I believe an M.R.C.V.S. has the right of appealing to the profession through your paper, and that letter of mine can be taken for an appeal on behalf of a man who was struck off the Register for conduct that his accuser does every week.

I myself am tackling our noble and honourable Council, as you will see by the enclosed letter, which is a copy of one sent to whoever happens to be President. Now you can read this, and when I mean every word *there is some fun on*, and I think it advisable under the circumstances for you to publish my *Professional Conduct and the Registration Committee*, as then the profession can prevent the Council from ignoring me, and *which means exposure to our Council*, because I have no respect for such men, nor any intention of listening to their jurisdiction, but shall deliberately try their "power" and I defy them to tackle me in a "Court of Law."

There is no libel about my communication, everything has been carefully gone through and can be proved correct all the way, and really the profession ought to have some idea of what is going on, otherwise when the facts do come out perhaps the electorate may grumble all the more, and what I can do, and will do unless the Council does as I request, will sure to be copied by other V.S's, and that would be serious from a higher education point of view.

Trusting you will oblige, and then I can leave the matter to the profession if they will act.—I remain, yours truly,

Kenneth Barker.

Thornbury, Glos., June 18th.

[Copy of Letter Sent.]

Thornbury, Glos,
June 18th, 1905.

To the President of the R.C.V.S.

Dear Sir,

I have the honour to request that you will, by virtue of your present position, kindly read this letter *publicly* to the Registration Committee, *which is the whole Council*, at your forthcoming meeting.

That I, Kenneth Barker, M.R.C.V.S., have reasonable suspicion that they do not carry out their "powers" etc. in an honourable and open manner, and beg to inform the Council that I consider, *from their treatment of Registration cases Nos. 1342 and 1360*, of which I paid the legal and other expenses etc., and am personally involved, *that I am now entitled to receive that due consideration that my diploma entitles me with our governing body.* If this is not forthcoming I must, with all due courtesy, inform you (the Council) that I consider *that you, by your actions, have forfeited all right of jurisdiction over either myself or my actions*, present and *hereafter*.

If it is your wish to call me *to order*, kindly take note that such action would involve the R.C.V.S. in considerable expense etc., as from the manner and courtesy etc. which both myself and my present assistant received *at your hands in April, 1904 and since*, it is hardly probable that I shall entertain any request of the Council to appear before the so-called "jury of the profession or trade," and *any action of the Council*, if proceeded with, must necessarily go before a "Civil Court" *where at least proceedings* that Mr. Geo. P. Mallett, M.R.C.V.S., Mr. Harry Potts, Ex-M.R.C.V.S., and Messrs. Thurston and Jolly, solicitors, and Messrs. Bridges and Co., and our Counsel and myself have experienced at your hands, *could not possibly happen.*

Lastly I request you, Mr. President, to inform the whole Council distinctly and definitely, that I am the equal in many ways of any Member of Council, and that I intend that the Council try cases Nos. 1342 and 1360 in a fair and honourable manner, and then perhaps they will find that they are dealing with a professional and strictly honourable M.R.C.V.S.

But if the Council ignore this, my last request, then they will find that a wealthy practitioner can so conduct himself that the profession *ask why a veterinary surgeon is allowed to advertise in dog papers*, and also to run an *animal medicine business* similar to Day and Sons, etc., to advertise in the *local papers* "*Calves Setoned and Vaccinated and Operated Upon.—K. Barker, Thornbury, Glos.*"

You can from me assure the Council that this will happen unless I get treated in a proper manner over *case No. 1360*, and you may be aware that, if these two cases are made public, as will happen in a "Civil Court," that the R.C.V.S. will not look very creditable to the profession or laymen; and again, you cannot compel me to refrain from using the M.R.C.V.S., as my diploma is a sufficient guarantee of my being what is called a fully qualified V.S. Kindly accept my thanks, yours truly,

Kenneth Barker.

HÆMORRHAGE AND BLOOD CLOT.

Sir,

Reading the letter of "A. I. M." in your last week's issue I think that the breeder of the Clydesdale, providing he knows his business, is rather foolish if he joins in at the loss on the deal.

The man who apparently would seem to be most responsible is the man who exposed the horse for sale after he had travelled 50 miles (*i.e.*, supposing he exposed him for sale directly after the journey) and who apparently had the horse suffering from catarrh (A.I.M. doesn't say whether the horse was working with the catarrh) on his premises without calling in veterinary aid until the horse was *in extremis*.

We all know the indifference of some people to catarrh in horses, and we all know the men who don't notice whether the horse eats his breakfast up before he goes out in the morning.

It would appear that the blood clot in the heart was the result of catarrhal influenza. Its size and situation might give some indication as to how long it had been forming, but from "A.I.M.'s" report it would seem to be recent, especially when taken in conjunction with the hæmorrhage denoting injury and rupture of the blood-vessel wall.

Altogether, I think that the owner ought to swallow his loss like a man, and put it down to "the fortunes of war" (or horse dealing) combined apparently with some lack of attention on the part of his man or himself.—Yours truly,

G. M.

COMMUNICATIONS AND PAPERS RECEIVED.—Messrs. W. H. Flook, K. Barker, G. Mayall, H. P. Hogben, J. A. Todd, J. Toms, T. W. Turner.

Our Dogs, *The Western Morning News*, *The Evening News* (Portsmouth), *The Dundalk Democrat*.

We shall be obliged by early intelligence of all matters worth bringing under the notice of the profession, and thankful to any friends who may send us cuttings from local papers containing facts of interest.

Original articles and reports should be written on one side only of the paper and authenticated by the names and addresses of the writers, not necessarily for publication.

Veterinary Societies—Addresses.

Alterations for this list must be duly notified by the Secretaries

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END OF VOLUME XVII.